respective swelling of the element bag portions E**41** to E**60**. Further, in the predetermined positions of the base member **106**, the element bag portions E**1** to E**17** may present the sense of touch for giving the concave and convex feeling with respect to the operator's finger or the like by the protuberant shape depending on the respective swelling of the element bag portions E**1** to E**17**.

[0270] Accordingly, it is possible to execute the operation panel building mode (icon image+sense-of-touch-representing unit) by the sense of touch representation function depending on the layered sheet unit **140** and by the display function of the icon image of the display unit **29**, so that the mobile phone **710** with the touch-sensitive variable sheet function for the icon touch, which is programmable between the layers, can be provided. Moreover, it is possible to improve the miniaturization and the operability of the input device **400**, thereby enabling the reduction of the miss-operation, the cost down and the simplification of the manufacturing process of the mobile phone **710** to be realized.

Embodiment 5

[0271] FIGS. **29**A and **29**B show a configuration of a touch-sensitive sheet member **150** as a fifth embodiment and a driving example thereof. In this example, the CPU **32** for controlling the touch-sensitive sheet member **150** for representing a sense of touch controls a driving power supply **55** so as to supply a driving voltage to an element muscle portion **54** of touch-sensitive sheet member **150** corresponding to image contents displayed on the display unit **29**, so that the element muscle portions **54** is available at predetermined positions of a base frame portion **53** corresponding to the image contents.

[0272] The touch-sensitive sheet member **150** shown in FIG. **29**A contains an electrode **51** for upper portion, an electrode **52** for lower portion, the sheet shaped base frame portion **53** and the element muscle portion **54**. The base frame portion **53** constitutes the base member and forms apertures **53***a* each having a predetermined aperture diameter. The element muscle portion **54** for representing a sense of touch is inserted in each of the apertures **53***a*. For the base frame portion **53**, a transparent soft silicon rubber member of the hardness 20° to 40° is used. The apertures **53***a* are formed at predetermined positions of the base frame portion **53**. For the element muscle portion **54**, a polymer material (artificial muscle) having transparency and also electric conductivity is used. The polymer material includes a flexible and strong electric conductive Embra (trademark) film and an electric conductive gel polymer which is largely swellable in good solvent. An operation voltage of each of them is around 1.5V.

[0273] The element muscle portion **54** inserted in each of the apertures **53***a* is sandwiched between the electrode **51** and the electrode **52** from the upward/downward directions. The electrode **51** and the electrode **52** have predetermined sizes and a predetermined driving voltage is applied between the electrodes **51**, **52**. The electrode **51** and the electrode **52** with common pattern or individually divided pattern are applied. For the electrodes **51**, **52**, a transparent ITO film is used. According to the operation principle of this element muscle portion **54**, the expansion and contraction motion thereof is obtained by exchanging polarity of the DC voltage which is applied to the electrodes **51**, **52**.

[0274] In the touch-sensitive sheet member **150** shown in FIG. **29**B, the electrode **51** and the electrode **52** are connected to the driving power supply **55** constituting the power supply unit as a medium-supplying unit, which supplies the driving voltage (medium) to the electrodes **51**, **52** sandwiching the polymer material therebetween. For the driving power supply **55**, a direct-current power supply is used. The driving power supply **55** outputs ±DC voltage of around 1.0 to 3.0V. For example, when the voltage of plus polarity is applied to the electrode **51** and the voltage of minus polarity is applied to the electrode **52** from the driving power supply **55**, minus ions are taken into the element muscle portion **54**, so that the element muscle portion **54** swells.

[0275] On the other hand, when the voltage of minus polarity is applied to the electrode **51** and the voltage of plus polarity is applied to the electrode **52** from the driving power supply **55**, minus ions are taken out of the element muscle portion **54**, so that the element muscle portion **54** contracts.

[0276] Also, when the driving voltage is applied to the electrodes **51**, **52** sandwiching an electric conductive elastomer (artificial muscle) of silicon, an acryl or the like therebetween, the electrodes are brought closer to each other. Consequently, the electric conductive elastomer leaks out to the outside of the electrodes **51**, **52**. When the supply of the driving voltage to the electrodes **51**, **52** is stopped, the electrodes **51**, **52** and also the electric conductive elastomer return to the original shapes if they are within the elastic displacement region.

[0277] By the way, the contraction rate of the human muscle is 20% and the maximum occurrence force is around 0.35 MPa (1 MPa=10 kgf/cm^2). On the other hand, according to the high-occurrence force type artificial muscle, if the driving voltage is 1.5V, the deformation rate thereof is 12% to 15% and the maximum occurrence force is around 49 MPa. Also, according to the high-contraction type artificial muscle, if the driving voltage is 1.5V, the deformation rate thereof is 20% to 40% and the maximum occurrence force is around 2 to 10 MPa.

[0278] The touch-sensitive sheet member **150** is constituted in this manner and when the driving voltage is supplied to the electrodes **51**, **52** arranged in the upward/downward directions of the element muscle portion **54** from the driving power supply **55**, the element muscle portion **54** may function as an electric conductive polymer actuator in which the expansion and contraction motion of the swelling, the contraction or the like occurs in approximately two seconds. Consequently, in the spots of or at the predetermined positions of the base frame portion **53**, the element muscle portion **54** can present the sense of touch for giving the concave and convex feeling with respect to the operator's finger **30***a* by the protuberant shape depending on the pressure change of the element muscle portion **54** or by the original shape when supplying no driving voltage.

[0279] FIG. **30** shows a configuration of an input device **500** to which the embodiment of the touch-sensitive sheet member **150** is applied. In this embodiment, the input device **500** which can carry out the operation panel building mode is provided. In the operation panel building mode, seventeen element muscle portions G**1** to G**17** constituting a first group and/or eight element muscle portions G**18** to G**25** constituting a second group, which are provided on the same plane of the base frame portion **53**, are selectable for every group.

[0280] To the input device **500** shown in FIG. **30** to which the touch-sensitive sheet member **150** shown in FIG. **29** is applied, any information is inputted by the slide and/or press operation depending on the finger or the like of the operator